road, about 20 feet (6.1 m) from the culvert entrance. One camera was on each pole, looking down at the culvert. Invisible infrared Light Emitting Diode (LED) spotlights were mounted directly above the entrance to each culvert to provide nighttime illumination. The system was powered by 4, 123-watt Panasonic solar panels and 4, 98-amp batteries.

Video Data Analysis

Only the first frame of each minute was reviewed. Each frame was inspected for evidence of wildlife crossings through the culvert, if anything was detected, the video was viewed in real time to determine the nature of the event. For each observed crossing event, duration, species, and direction were recorded. Each observed event was recorded and saved; these video segments are referred to as "clips."

Because only a portion of the available video frames were sampled (1 frame per minute), a detection probability for crossing events was estimated (Kleist 2005). For each event less than 1 minute, the duration was divided by 60 seconds to determine the probability of detecting this event. Each event 1 minute or longer has a detection probability of 1.0, since 1 frame per minute was observed, thus:

$p_i = d_i /60$ if d_i is less than or equal to 59 seconds

$p_i = 1$ if d_i is greater than 59 seconds,

where p_i = probability of detection for each event, and d_i = the duration of the event in seconds. An estimated number of animals that actually crossed was calculated as the sum of the animals per event divided by each event-specific detection probability, or $N = \sum$